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4F-MDMB-BINACA

(4F-MDMB-BUTINACA)

Introduction:

Synthetic cannabinoids are designer drugs created to mimic the psychoactive effects of $\Delta 9$ -tetrahydrocannabinol (THC), the primary active substance in cannabis, and have increasingly been linked to neurotoxic effects and widespread bodily harm. Synthetic cannabinoids emerged onto the designer drug market in the early/mid 2000s. Originally, various products containing synthetic cannabinoids (e.g., JWH-018) laced onto plant material had been encountered by law enforcement, leading to the control of cannabimimetic agents as a class, if the substance met structural and pharmacological criteria. In response to this federal control, a new generation of synthetic cannabinoids outside the cannabimimetic agent definition has emerged, including 4F-MDMB-BINACA.

Licit Uses:

4F-MDMB-BINACA has no commercial or accepted medical uses in the United States.

Chemistry:

4F-MDMB-BINACA is chemically known as methyl 2-(1-(4-fluorobutyl)-1*H*-indazole-3-carboxamido)-3,3-dimethylbutanoate. The CAS number for 4F-MDMB-BU-TINACA is 2390036-46-9. The chemical structure for 4F-MDMB-BINACA is shown below:

Pharmacology:

Data from preclinical studies show that 4F-MDMB-BINACA binds to and acts as an agonist at the CB1 receptor. In drug discrimination studies in rats, 4F-MDMB-BINACA generalized to $\Delta 9$ -THC (i.e., produced subjective effects similar to those of $\Delta 9$ -THC).

There are no published studies on the safety of 4F-MDMB-BINACA for human use. Ingestion of synthetic cannabinoids have been shown to cause serious adverse effects including nausea, vomiting, seizures,

tachycardia, multi-organ failure, and/or death.

Illicit Uses:

Recreational use of synthetic cannabinoids has been reported as an attempt to circumvent legal restrictions regarding marijuana. 4F-MDMB-BINACA has been encountered in numerous synthetic cannabinoid products that are smoked for their psychoactive effects. These products include synthetic cannabinoid laced plant material that is marketed under the guise of herbal incense products, as well as liquid concentrates for use in electronic cigarettes (vapes), often marketed and sold as "synthetic marijuana."

Poison control centers continue to report adverse health effects in response to the abuse of synthetic cannabinoids

User Population:

Information on user population in the United States is limited; however, studies suggest that adolescents and young adults (15 – 24 years old) may be the most likely users of synthetic cannabinoid products.

DEA's Toxicology Testing Program (DEA TOX) analyzes biological samples from drug related overdoses to aid in the identification of novel psychoactive substances. 4F-MDMB-BUTINACA was detected in a fatal overdose case submitted to DEA TOX.

Illicit Distribution:

DEA's National Forensic Laboratory Information System (NFLIS) Drug database collects scientifically verified data on drug items and cases submitted to and analyzed by participating federal, state, and local forensic drug laboratories. NFLIS-Drug has received approximately 4,000 reports of 4F-MDMB-BUTINACA since it was first reported in 2018.

Control Status:

4F-MDMB-BINACA is controlled in schedule I of the Controlled Substances Act, as of April 10, 2017. It was controlled as a positional isomer of 5F-AMB, as defined by 21 CFR § 1300.01, and is now specially listed in schedule I as of June 22, 2021.

Comments and additional information are welcomed by the Drug and Chemical Evaluation Section; Fax 571-362-4250, Telephone 571-362-3249, or Email DPE@dea.gov.